REMARKS

REJECTIONS UNDER 35 U.S.C. §§ 102 & 103

The Examiner has rejected claims 5 and 14-17 under U.S.C. § 102 as being anticipated by GB 828,447. The Examiner contends that GB '447 discloses a vulcanizable composition comprising rubber and bismuth trioxide wherein the bismuth trioxide is present in amounts of 1 to 37.5 percent. The Examiner further suggests that these compositions are useful in the manufacture of tires. Acknowledging that GB '447 teaches bismuth oxide as one of three metal oxides (*i.e.,* lead, copper, or bismuth oxide), the Examiner further rejects claims 5 and 14-17 under U.S.C. § 103(a) as being unpatentable over GB '447 because the Examiner believes that it would have been obvious to one of ordinary skill in the art to select bismuth trioxide from the oxides taught by GB '447.

In view of the amendments made to the claims and the new claims presented, reconsideration is respectfully requested.

GB '447 is primarily concerned with overcoming the deleterious affect on the curing rates of rubber vulcanizates caused by active fillers.[1] These problems are overcome by the inclusion of a minor quantity of at least one oxide of lead, copper, or bismuth.[2] Thus, the only fair reading of GB '447 is that it teaches rubber vulcanizates (or vulcanizable compositions) that include "active fillers." These active fillers may include activated powdered carbon such as Darco G-60 or Nuchar.[3] GB '447 fails to teach any other carbon black fillers.

Applicant discovered that the presence of bismuth trioxide within rubber vulcanizates reduces the hysteresis loss associated with those vulcanizates. Accordingly, the addition of bismuth trioxide to conventional tread formulations advantageously improves the ultimate tread product.[4]

Accordingly, the problem sought to be solved by Applicant was entirely distinct from the problem attempted to be solved by GB '447. Moreover, because the conventional tread formulations that Applicant sought to improve do not include activated fillers, the treads that Applicant sought to improve do not suffer from problems associated with those vulcanizates that include activated fillers; *i.e.,* poor cure.

Accordingly, claim 1 has been amended to recite that the composition includes a

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[1] Page 1, lines 12-17.
[2] Page 1, lines 51-60.
[3] Page 1, lines 70-75.
[4] Written description, page 6, lines 25-28 teaches preferred tire tread compounds.

tread-grade carbon black in addition to the bismuth trioxide. Page 6, lines 25-28, of the written description teaches that a preferred embodiment for practicing the present invention includes a tread formulation. As those skilled in the art will appreciate, tread formulations employ distinct tread-grade carbon black.[5] Thus, while the written description does not provide "word for word" support for the tread-based carbon black fillers, Applicants believe that the written description does provide adequate support for the claimed recitation within the purview of 35 U.S.C. § 112. Moreover, the examples recite that the tread formulations described therein include N234 carbon black filler, which those in the art will appreciate is a tread-grade carbon black filler.[6] As set forth in ASTM D1765, N234 has a surface area of about 119 m2/g[7]; claim 30 has been drafted in accordance therewith.

CONCLUSION

In view of the foregoing amendments and arguments presented herein, a formal Notice of Allowance of claims 14 and 21-30 is earnestly solicited. Should the Examiner care to discuss any of the foregoing in greater detail, the undersigned attorney would welcome a telephone call.

The Commissioner is specifically authorized to charge Deposit Account No. 06-0925 in the amount of $84.00 for the payment of fees associated with the additional claims as calculated on the Transmittal Sheet submitted herewith. Also submitted herewith is a Request for a two month extension of time. In the event that an additional fee is due or that any amount should be credited, the Commissioner is authorized to charge any additions fees or credit any overpayment to Deposit Account No. 06-0925.

Respectfully submitted,

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[5] *See* Sid Richardson Carbon Company Website (Exhibit A).
[6] Written description, pages 13-14.
[7] See Exhibit B.

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Sid Richardson Carbon Company

Products

Sid Richardson Carbon Co. Blacks

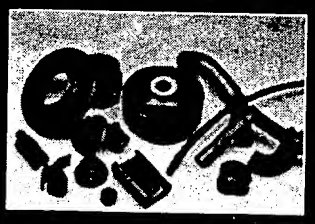
Carbon black is one of the darkest and most finely divided materials known. Chemically, carbon black is a colloidal form of elemental carbon consisting of 90 to 99 percent carbon. Made in specially designed reactors operating at internal temperatures in the range of 2600° to 3600° F, different grades of carbon black can be produced with varying aggregate sizes and structures. It is these differences that allow our blacks to be used in a variety of applications.

Tire Blacks

Carbon black in tire applications can be divided into two basic categories. Highly reinforcing or tread blacks can be identified by ASTM numbers in the 100, 200, and 300 series. These blacks impact improved tread wear of tires as well as traction, cut resistance, and sidewall abrasion resistance.

Semi-reinforcing or carcass blacks are identified by ASTM 500, 600, and 700 series designations. In tire applications, these carbon blacks are used in the body of the tire where they impact ply strength, low histeresis and air retention.

Industrial Rubber Black



Sid Richardson Carbon Co. has over 20 different grades of carbon black available for use in rubber compounds, for both tire and mechanical goods applications. Sid Richardson Carbon Co. blacks are made to a standard high quality for both tire and non-tire end user applications. Our blacks are used every day in some of the toughest quality applications that exist for industrial or mechanical good parts. Examples include automotive sealing systems, brake diaphragms, sheet roofing, lathe cut gaskets, injection-molded parts, compression-molded parts, and transfer-molded parts.

Special Applications

Many traditional rubber grade carbon blacks can easily make the transition over to other applications. Several of our products are used as UV stabilizers, extenders, and colorants in the plastics industry. We have ongoing efforts to develop new applications such as printing inks, cement colorant, and furnace refractory.

Contact Us

We invite you to contact us for help in selecting the grade that is right for your application. Our Technical Service and R&D departments are recognized as industry leaders and are ready to respond to your product needs.

Exhibit A

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TABLE 1 Carbon Black Properties

NOTE 1—The iodine adsorption number and DBP number values represent target values. A target value is defined as an agreed upon value on which producers center their production process and users center their specifications. All other properties shown are averages of typical values supplied by several manufacturers. Typical properties are dependent upon the target values and may vary from producer to producer at the same iodine adsorption and DBP absorption numbers because of the differences in processing equipment.

NOTE 2—The cure rate of vulcanizates containing carbon black compounded by Test Methods D 3192 may be measured by Test Method D 2084.

	Target Values[A]		Typical Descriptive Values[A]					
ASTM Classification	Iodine Adsorption No.,[B] D 1510, g/kg	DBP No. D 2414, 10^{-5} m^3/kg	DBP No. Compressed Sample, D 3493, 10^{-5} m^3/kg	NSA Multipoint D 6556, 10^3 m^2/kg (m^2/g)	STSA D 6556 10^3 m^2/kg (m^2/g)	Tint Strength, D 3265	Pour Density, D 1513, kg/m^3 (lb/ft^3)	Δ Stress[C] at 300 % Elongation, MPa(psi), cured at 145°C, D 412, D 3182, and D 3192
								30 min
N110	145	113	97	127	115	123	345 (21.5)	−3.2 (−470)
N115	160	113	97	137	124	123	345 (21.5)	−3.1 (−440)
N120	122	114	99	126	113	129	345 (21.5)	−0.4 (−60)
N121	121	132	111	122	114	119	320 (20.0)	−0.1 (−10)
N125	117	104	89	122	121	125	370 (23.0)	−2.6 (−380)
N134	142	127	103	143	137	131	320 (20.0)	−1.5 (−210)
N135	151	135	117	141	...	119	320 (20.0)	−0.4 (−60)
S212	...	85	82	120	107	115	415 (26.0)	−6.4 (−930)
N220	121	114	98	119	106	116	355 (22.0)	−2.0 (−280)
N231	121	92	86	111	107	120	400 (25.0)	−4.6 (−670)
N234	120	125	102	119	112	123	320 (20.0)	−0.1 (−10)
N293	145	100	88	122	111	120	380 (23.5)	−5.2 (−750)
N299	108	124	104	104	97	113	335 (21.0)	0.7 (90)
S315	..	79	77	89	86	117	425 (26.5)	−6.4 (−930)
N326	82	72	68	78	76	111	455 (28.5)	−3.6 (−530)
N330	82	102	88	78	75	104	380 (23.5)	−0.6 (−80)
N335	92	110	94	85	85	110	345 (21.5)	0.2 (30)
N339	90	120	99	91	88	111	345 (21.5)	0.9 (140)
N343	92	130	104	96	92	112	320 (20.0)	1.4 (210)
N347	90	124	99	85	83	105	335 (21.0)	0.5 (70)
N351	68	120	95	71	70	100	345 (21.5)	1.1 (160)
N356	92	154	112	91	87	106		1.4 (200)
N358	84	150	108	80	78	98	305 (19.0)	2.3 (330)
N375	90	114	96	93	91	114	345 (21.5)	0.4 (60)
N539	43	111	81	39	38	...	385 (24.0)	−1.3 (−180)
N550	43	121	85	40	39	...	360 (22.5)	−0.6 (−90)
N582	100	180	114	80	...	67		−1.8 (−260)
N630	36	78	62	32	32	...	500 (31.0)	−4.4 (−640)
N642	36	64	62	39	...	...		−5.4 (−780)
N650	36	122	84	36	35	...	370 (23.0)	−0.7 (−110)
N660	36	90	74	35	34	...	440 (27.5)	−2.3 (−330)
N683	35	133	85	36	34	...	355 (22.0)	−0.4 (−60)
N754	24	58	57	25	24	...		−6.6 (−960)
N762	27	65	59	29	28	...	515 (32.0)	−4.6 (−660)
N765	31	115	81	34	32	...	370 (23.0)	−0.3 (−40)
N772	30	65	59	32	30	...	520 (32.5)	−4.7 (−680)
N774	29	72	63	30	29	...	490 (30.5)	−3.8 (−550)
N787	30	80	70	32	32	..	440 (27.5)	−4.2 (−610)
N807	...	34	..	9	9	...	640 (40.0)	−9.4 (−1360)
N908	...	34	...	9	9	...	355 (22.0)	−10.2 (−1480)
N990	...	43	37	8	8	...	640 (40.0)	−8.6 (−1250)
N991	...	35	37	8	8	...	355 (22.0)	−10.2 (−1480)

[A] See Note 1 above.

[B] In general, Test Method D 1510 can be used to estimate the surface area of furnace blacks but not channel, oxidized, and thermal blacks.

[C] Δ Stress = stress at 300 % elongation of test black minus the stress at 300 % elongation of IRB No. 7.

[D] New numbers are marked to designate that the requestor has a one-year period, starting from the number's approval date as shown in Footnote 1, to revise, by letter ballot, target and typical values.

NOTE 1—Some of the carbon blacks in Table 1 were assigned prior to the establishment of the surface area classification system and may fall outside of the specified ranges.

3.3 The third and fourth characters in this system are arbitrarily assigned digits.

4. Typical Properties of Carbon Blacks

4.1 Each of the standard grades of carbon black shall have target and typical physical properties prescribed in Table 1.

4.2 Vulcanizates containing each of the standard grades of carbon black shall have typical physical properties prescribed in Table 1.

4.2.1 The 300 % stress values shown in Table 1 represent the typical differences between the values obtained for the test black and those obtained for Industry Reference Black No. 7. In practice, the black compounds shall be mixed and tested at the same time using the formulation in Test Methods D 3192.